Title (en)
SUPERCONDUCTIVE LAYER AND METHOD FOR PREPARATION THEREOF

Title (de)
SUPRALEITFÄHIGE SCHICHT UND VERFAHREN ZU IHRER HERSTELLUNG

Title (fr)
COUCHE SUPERCONDUCTRICE ET PROCEDE DE PREPARATION

Publication
EP 1482521 A1 20041201 (EN)

Application
EP 03743613 A 20030305

Priority
- JP 0302577 W 20030305
- JP 2002059398 A 20020305

Abstract (en)
[origin: US2004192559A1] There is provided is a method of manufacturing a superconductor layer, including preparing a coating solution by dissolving trifluoroacetates of at least one metal selected from the group consisting of yttrium and lanthanoids, barium, and copper in a solvent, coating a main surface of a substrate with the coating solution to form a coating film, subjecting the coating film to a calcining process in an atmosphere containing oxygen, and subjecting the coating film after the calcining process to a firing process in an atmosphere containing water vapor at a temperature higher than that at the calcining process. The calcining process is carried out such that the coating film after the calcining process and before the firing process have an average CuO particle diameter equal to or less than 25 nm.

IPC 1-7 (main, further and additional classification)
H01B 12/06; C01G 3/00; H01B 13/00; H01L 39/02; H01L 39/24

IPC 8 full level (invention and additional information)
H01L 39/14 (2006.01); **H01B 12/06** (2006.01); **H01B 13/00** (2006.01); **H01L 39/24** (2006.01)

CPC (invention and additional information)
H01L 39/2425 (2013.01)

Cited by
US9112106B2

Designated contracting state (EPC)
DE FR GB

EPO simple patent family
US 2004192559 A1 20040930; US 7069065 B2 20060627; DE 60327601 D1 20090625; EP 1482521 A1 20041201; EP 1482521 A4 20070321; EP 1482521 B1 20090513; EP 1482521 B2 20180606; JP 2003257259 A 20030912; JP 3725085 B2 20051207; US 2006199741 A1 20060907; WO 03075288 A1 20030912

INPADOC legal status

2018-06-06 [27A] MAINTAINED AS AMENDED
- Effective date : 20180606

2018-06-06 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : B2
- Designated State(s) : DE FR GB

2018-06-06 [REG DE R102] EPO DECISION MAINTAINING PATENT IN AMENDED FORM NOW FINAL
- Document : DE 60327601

2018-05-31 [PGFP FR] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : FR
- Payment date : 20180223
- Year of fee payment : 16

2018-04-30 [PGFP GB] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : GB
- Payment date : 20180228
- Year of fee payment : 16

2018-04-30 [PGFP DE] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : DE
- Payment date : 20180220
- Year of fee payment : 16

2018-02-23 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 16

2018-01-03 [REG GB 732E] AMENDMENTS TO THE REGISTER IN RESPECT OF CHANGES OF NAME OR CHANGES AFFECTING RIGHTS (SECT. 32/1977)
- Free text : REGISTERED BETWEEN 20171207 AND 20171213

2017-11-29 [RAP2] TRANSFER OF RIGHTS OF AN EP GRANTED PATENT

- Owner name : KABUSHIKI KAISHA TOSHIBA

2017-11-15 [REG DE R081] CHANGE OF APPLICANT/PATENTEE
- Owner name : KABUSHIKI KAISHA TOSHIBA, JP
- Free text : FORMER OWNERS: KABUSHIKI KAISHA TOSHIBA, TOKIO/TOKYO, JP; INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CENTER, THE JURIDICAL FOUNDATION, TOKIO/TOKYO, JP
- Document : DE 60327601

2017-11-15 [REG DE R082] CHANGE OF REPRESENTATIVE
- Document : DE 60327601
- Representative's name : HOFFMANN - EITLE PATENT- UND RECHTSANWAELTE PA, DE

2017-02-09 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 15

2017-01-04 [R26] OPPOSITION FILED (CORRECTION)
- Opponent name : ZENERGY POWER GMBH
- Effective date : 20100209

2016-02-03 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 14

2014-10-23 [REG DE R081] CHANGE OF APPLICANT/PATENTEE
- Owner name : INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CEN, JP
- Free text : FORMER OWNER: CHUBU ELECTRIC POWER CO., INC., INTERNATIONAL SUPERCONDUCTIVITY, KABUSHIKI KAISHA TOSHIBA, , JP
- Document : DE 60327601
- Effective date : 20140917

2014-10-23 [REG DE R081] CHANGE OF APPLICANT/PATENTEE
- Owner name : KABUSHIKI KAISHA TOSHIBA, JP
- Free text : FORMER OWNER: CHUBU ELECTRIC POWER CO., INC., INTERNATIONAL SUPERCONDUCTIVITY, KABUSHIKI KAISHA TOSHIBA, , JP
- Document : DE 60327601
- Effective date : 20140917

2014-10-23 [REG DE R081] CHANGE OF APPLICANT/PATENTEE
- Owner name : INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CEN, JP
- Free text : FORMER OWNERS: CHUBU ELECTRIC POWER CO., INC., NAGOYA, AICHI, JP; INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CENTER, THE JURIDICAL FOUNDATION, TOKIO/TOKYO, JP; KABUSHIKI KAISHA TOSHIBA, TOKIO/TOKYO, JP
- Document : DE 60327601
- Effective date : 20140917

2014-10-23 [REG DE R081] CHANGE OF APPLICANT/PATENTEE
- Owner name : KABUSHIKI KAISHA TOSHIBA, JP
- Free text : FORMER OWNERS: CHUBU ELECTRIC POWER CO., INC., NAGOYA, AICHI, JP; INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CENTER, THE JURIDICAL FOUNDATION, TOKIO/TOKYO, JP; KABUSHIKI KAISHA TOSHIBA, TOKIO/TOKYO, JP
- Document : DE 60327601
- Effective date : 20140917

2014-10-23 [REG DE R082] CHANGE OF REPRESENTATIVE
- Document : DE 60327601
- Representative's name : HOFFMANN - EITLE, DE
- Effective date : 20140917

2014-10-23 [REG DE R082] CHANGE OF REPRESENTATIVE
- Document : DE 60327601
- Representative's name : HOFFMANN - EITLE PATENT- UND RECHTSANWAELTE PA, DE
- Effective date : 20140917

2014-10-08 [RAP2] TRANSFER OF RIGHTS OF AN EP GRANTED PATENT
- Owner name : INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CENTER,

2014-10-08 [RAP2] TRANSFER OF RIGHTS OF AN EP GRANTED PATENT
- Owner name : KABUSHIKI KAISHA TOSHIBA

2014-09-17 [REG DE R082] CHANGE OF REPRESENTATIVE
- Document : DE 60327601
- Representative's name : HOFFMANN - EITLE, DE

2010-03-17 [26] OPPOSITION FILED
- Opponent name : ZENERGY POWER GMBH

- Effective date : 20100209

2009-06-25 [REF] CORRESPONDS TO:
- Document : DE 60327601 P 20090625

2009-05-13 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : B1
- Designated State(s) : DE FR GB

2009-05-13 [REG GB FG4D] EUROPEAN PATENT GRANTED

2009-03-04 [RAP1] TRANSFER OF RIGHTS OF AN APPLICATION
- Owner name : KABUSHIKI KAISHA TOSHIBA

2009-03-04 [RAP1] TRANSFER OF RIGHTS OF AN APPLICATION
- Owner name : CHUBU ELECTRIC POWER CO., INC.

2009-03-04 [RAP1] TRANSFER OF RIGHTS OF AN APPLICATION
- Owner name : INTERNATIONAL SUPERCONDUCTIVITY TECHNOLOGY CENTER,

2008-09-10 [RIC1] CLASSIFICATION (CORRECTION)
- IPC : H01L 39/14 20060101AFI20080801BHEP

2008-09-10 [RIC1] CLASSIFICATION (CORRECTION)
- IPC : H01L 39/24 20060101ALI20080801BHEP

2008-09-10 [RIC1] CLASSIFICATION (CORRECTION)
- IPC : H01B 12/06 20060101ALN20080801BHEP

2008-09-10 [RTI1] TITLE (CORRECTION)
- Free text : SUPERCONDUCTIVE LAYER AND METHOD FOR PREPARATION THEREOF

2007-06-20 [17Q] FIRST EXAMINATION REPORT
- Effective date : 20070516

2007-03-21 [A4] DESPATCH OF SUPPLEMENTARY SEARCH REPORT
- Effective date : 20070215

2005-01-19 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : ARAKI, TAKESHI,406 TOSHIBA OOJIMA APARTMENT

2005-01-19 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : NIWA, TOSHIHARU

2005-01-19 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : MUROGA, TAKEMI

2005-01-19 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : YAMADA, YUTAKA

2005-01-19 [RIN1] INVENTOR CHANGED BEFORE GRANT
- Inventor name : HIRABAYASHI, IZUMI

2004-12-01 [17P] REQUEST FOR EXAMINATION FILED
- Effective date : 20040315

2004-12-01 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : A1
- Designated State(s) : DE FR GB